BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An Open Forum for brief discussions of the workaday problems of the bedside doctor. Suggestions of subjects for discussions invited.

ON OBESITY

PATHOGENESIS AND DIAGNOSIS

R. A. KOCHER, M.D. (P. O. Box 926, Carmel).

It has been customary to classify obese cases as endogenous and exogenous. I prefer the terms "simple" and "endocrine" obesity. Simple obesity is solely the result of overindulgence in food. Endocrine obesities include a considerable group of cases of glandular dysfunction presenting adiposity as a symptom. However, adiposity is not a necessary accompaniment, and these glandular dystrophies each present their own symptom complex. All cases of obesity are exogenous in the sense that accumulations of stored fat cannot result unless the total calories in the diet exceed the caloric energy produced in the body.

Taking all types of obesity, there is abundant evidence to show that over 50 per cent of the cases present a hereditary tendency. Let us first consider simple obesity, and illustrate the same with a case history.

Simple Obesity.—A woman, age fifty-six, housewife (does no work, has two servants); complaint, shortness of breath on exertion, headache, tension in back of the neck (these patients seldom consult a physician for esthetic reasons alone). General health in the past has always been good, has had no serious illness. Menstrual history normal; has had three children, all living and well. Until the age of thirty, her weight was quite constant, at about 115 to 118 pounds. There was then a gradual increase up to the age of fifty, when her weight reached 195 pounds, remaining about the same ever since. She says she has been "comfortably fat" for about twenty years and did not associate her shortness of breath, and headaches, which developed only during the last six months, with her obesity. Heart, transverse type, considerably enlarged in all dimensions, but chiefly to the left; rate 80, no disturbance in rhythm. Blood pressure: systolic 180; diastolic, 110. There is a marked acceleration in heart and respiratory rate after moderate exercise, with delayed return to normal. Fat distribution is fairly even, most marked over abdomen, but with absence of excessive mammary, trochanteric or extremity masses; no supraclavicular pads, nor infiltration areas.

Urine: Specific gravity, 1010; few hyaline casts. Blood count, normal. Basal metabolism, normal.

This patient reported that, while she had a good appetite, she considered herself a light eater. On close questioning, it was learned that she was a connoisseur of food, preferring French cooking; likes gravy, bread, butter, olive oil, heavy soups, pastry and the like. It is apparent from this that while she may have consumed a small bulk, she selected those foods of high caloric content. Water and cellulose-containing foods, as vegetables and fruits, were not much in evidence in her menu. For exercise, she reports that for years she seldom indulged in anything more strenuous than bridge.

The response shown by such patients to a course of restricted caloric intake is often a diagnostic test as to the presence of any underlying metabolic disturbance. This patient on a caloric intake of 1,000 daily, lost weight at the rate of three to four pounds per week; which I consider the upper limit of safety where such a course of reducing is to be continued over a period of weeks or months. When this patient had lost about twenty pounds in weight, the systolic blood pressure had dropped to 155 to 160, and remained at this level, even though the patient subsequently lost fifteen additional pounds. A similar blood pressure response has been observed in other cases.

This case is presented as more or less typical of simple or overeating obesity. Any physician is familiar with similar cases in his own practice. Of particular significance are the symptoms of distress characteristic of a degenerative process in the cardiorenal system, an almost inevitable accompaniment or penalty of prolonged obesity. "We dig our graves with our forks," as some wag would have it. With advancing years there is a gradual decline in the level of the oxidative processes of the body. With the years there is likewise a decreasing inclination for bodily exercise. With most persons there is a nice adjustment of appetite calling for less food, especially of the richer varieties, which keeps the body weight at a fairly constant level over a period of many years. With others, this unconscious adjustment of appetite to actual food requirement is not so apparent, and there is either a constant battle against the increasing tendency to gain weight or a serene overindulgence in food with a complacent acceptance of the resultant corpulence. Perhaps it is a matter of morals. Joslin, at least, hopes that the time will come when it will be considered immoral to be fat.

By what mechanism obesity, over a period of years, produces pathological degenerative conditions such as diabetes, nephritis, arteriosclerosis, is not clear. Not all cases result in degenerative disease. It may even be argued with some degree of conviction that such degenerative processes, which appear only late in the course of obesity, may have a common origin with the latter in some as yet little understood aberration in cellular metabolism. This is a fascinating field for speculation, but should prove a fruitful field for investigation.

Obesity with Glandular Disturbance.—Passing now from simple obesity, let us consider, briefly, those cases accompanied with glandular disturb-

ance. The classical example is hypothyroidism, or myxedema, where the pathologically lowered metabolic rate is probably the chief eiologic agent in the accumulation of fat. Here the response to treatment with thyroid gland, or its derivatives, becomes a strong confirmatory diagnostic agent, not only in the weight response, but in the prompt improvement in many of the other related symptoms of this deficiency disease. Restrictions in diet may or may not be necessary in the correction of weight in these cases. The obesity is only one of the symptoms it is aimed to improve. With the increased metabolism produced by thyroid therapy, caloric restriction of the diet is generally not indicated.

In the remaining types of endocrine obesity, especially in those where there is no accompanying disturbance in thyroid metabolism, the genesis of the glandular dysfunction with respect to the adiposity is not always so apparent. The common types are associated with deficiencies in the gonadal system, and referred to as dystrophia adiposogenitalis, eunuchoidism, pituitary disease, etc.; the polyglandular cases falling under such headings as thyropituitarism, pituitarothyroidism, etc. By no means all of these cases show obesity, or even localized adiposity. The symptomatology is very diverse, and for a full discussion the reader is referred to works such as Engelbach's "Endocrine Medicine." For the purpose of the present discussion, it may suffice to point out the characteristic fat distribution in obese cases of pituitary involvement. The girdle adiposity of adiposogenital pituitarism is a classical example. The peculiar and enormous trochanteric pads of fat in certain of these pituitary obese cases is typical. Since the basal metabolism of the majority of these cases is normal, the treatment as far as the obesity alone is concerned, is dietetic, physiotherapy, exercise, in combination with the indicated glandular therapy.

Anyone having experience with the treatment of obese cases occasionally finds a patient who, in spite of a normal basal metabolism, and though placed on a reduced caloric diet and increased physical activity, fails to lose weight over a considerable period of observation. A certain percentage of such cases will be found, by making a careful check of the water balance, to be retaining fluid in the body, along with the loss of body fat. There remains, however, a certain small minority in which this is not the case. Such cases suggest that there may be some undiscovered disturbance in the chemistry or physiology of energy exchange. It has been suggested that the basal metabolic rate, as generally taken, is not a true index of the twenty-four-hour metabolism. If this is true, a fluxuation, such as a depression of the B. M. R. during sleep, would explain the condition. However, no adequate twenty-four-hour determinations of energy exchange have ever been made in such cases to prove or disprove this point. These cases likewise respond to a reduced caloric intake by a loss in weight, provided the diet is sufficiently restricted. Possibly the use of drugs of the dinitrophenol group should be restricted to obese cases of this type.

DANGERS AND TREATMENT

W. D. SANSUM, M. D. (The Sansum Clinic, Santa Barbara).—People would be more interested in maintaining a normal body weight if they could be made to realize the seriousness of overweight. Usually they either ignore the excess weight, or are interested merely in reducing from the standpoint of appearance. This indifferent attitude is maintained until some accident attributable to the overweight occurs. We believe that a frank statement of the dangers of overweight is the most convincing argument in favor of adequate treatment.

THE DANGERS OF OBESITY

The Span of Life Is Shortened by Obesity.—Prominent life insurance companies have collected comprehensive statistical data which demonstrate the risk of obesity from an insurance point of view. These show that for each pound a person is over- or underweight, the average expectancy of life is decreased by one per cent. For example, a woman forty years of age, five feet six inches tall with shoes, should weigh about 138 pounds dressed. At this weight, her life expectancy would be twenty-eight years, according to actuary tables. If, however, at this age she actually weighs 188 pounds—that is, she is fifty pounds overweight—her life expectancy is reduced to fourteen years. Instead of expecting to live to be sixty-eight, she only can expect to live to be fifty-four years of age.

The Heart Is Usually Enlarged.—It is believed that the heart must enlarge to carry on efficiently in the presence of the excess body weight. We have made thousands of measurements, by means of the orthodiagram, of the plane surface of the heart shadow. We have found this enlarged in most obese patients, particularly those whose obesity is of long standing. This enlargement of the shadow, particularly of the transverse diameter, may not mean permanent cardiac damage, because we frequently see it recede after body weight has returned to normal. Although the orthodiagram is the best simple method of estimating cardiac size, it does not give sufficient information regarding the volume of the heart. Further studies with the dialectograph may yield valuable information along this line.

The Blood Pressure Is Usually Increased.—Most of our obese patients have had hypertension. Similar to the enlargement of the heart, this condition might be expected from mechanical considerations. Each pound of excess body weight is said to require about one extra mile of small blood vessels. Increased pressure would be necessary to carry blood through this extra network of blood vessels. As the blood pressure rises, further enlargement of the heart is necessary in order to perform the additional work required. Therefore we see the largest hearts in obese patients with elevated blood pressure. In our own series of patients, blood pressure readings have fallen as body weight approached normal, even when the hypertension was not obviously secondary to the obesity. Similar observations upon the association

of overweight and hypertension have been made at the Mayo Clinic.

Arteriosclerosis Eventually Follows.—There is considerable evidence that hypertension from any cause is associated with varying degrees of arterio- and arteriolosclerosis.

Obese Individuals Have a Predisposition to Diabetes Mellitus.—Obesity is so commonly followed by, or associated with, diabetes that leading authorities consider it to be one of the most important factors in the causation of this serious disease. More than one-half of the adult patients in our own diabetic series have been overweight, have had enlargement of the heart and high blood pressure at the beginning of their treatment.

Obesity Is a Cause of Lowered Body Resistance.—It is said that general body resistance is usually lowered in the presence of obesity, so that obese individuals are more susceptible to such common diseases as pneumonia and influenza. The prognosis is more grave in the obese than in the normal persons.

Obese Patients Are Poor Surgical Risks.—Cholecystitis, with or without cholelithiasis, occurs more frequently in obese than in normal persons. If surgical intervention becomes necessary, surgeons attempt such operations only with great reluctance when some emergency demands immediate operation.

TREATMENT

Authorities believe that overweight in adults is usually preceded by overeating and underexercising. Dysfunction of the glands of internal secretion probably plays a rôle, the exact nature of which is not yet fully understood. We use thyroid by mouth when the basal metabolic rate is low, carefully watching the clinical symptoms and doing repeated basal metabolic rates. Regardless of the type of obesity, exercise and diet form the two most important factors in its treatment. Weight should not be lost too rapidly. We do not advise a loss of more than ten pounds per month, and in some instances even a slower rate of loss is advisable.

Exercise.—The amount and type of exercise will depend upon the individual patient's general physical condition. Exercise should be prescribed only after a careful physical examination of the patient, because of the frequency of heart, blood vessel, and kidney complications in obese individuals. In the presence of heart failure, or impending heart failure, patients should be kept in bed. Massage and bed exercises are valuable in such cases to maintain normal muscle tone. Walking is not only one of the cheapest, but also one of the best forms of exercise. Patients usually know how far they can walk without undue fatigue. The distance walked each day should be increased gradually. Golf, horseback riding, tennis and swimming are entertaining types of outdoor exercise. Supervised gymnasium exercises, associated with reducing massage, are valuable if the patient can afford the extra attention. Some cases require orthopedic adjustments before walking or other exercises should be undertaken.

Diet.—The diet should be carefully planned in order not to violate any of the accepted principles of nutrition. It should contain an adequate amount of protein, carbohydrate, minerals, vitamins, and residue. The number of calories allowed per day will vary with individual needs, and will usually range from 800 to 1,200. This is intentionally planned to be below basal requirements of the patient.

The quantity of protein should be at least a gram per kilogram of the average between ideal and present weight. We rarely use less than 75 grams of protein per day, and often as much as 90 to 100 grams. These higher protein diets satisfy the appetite, have a greater specific dynamic action, and are more apt to keep the patient in nitrogen balance. The protein can be obtained from skim milk, cottage cheese, eggs, lean meat, fish, and fowl.

The diet should contain as much carbohydrate as it is possible to include within the caloric requirements. It is believed that a liberal amount of carbohydrate in the diet assists in the burning of body fat. Carbohydrate can be obtained from the low percentage fruits and vegetables, and milk.

A liberal quantity and variety of vitamins are assured by generous servings of the low percentage fruits and vegetables. A small amount of butter or cream is usually included in order to provide some of the valuable fat-soluble vitamins. The milk and eggs also supply some vitamins.

Mineral elements are supplied mainly by the milk, fruits, and vegetables; but we sometimes add such mineral substances as calcium and iron.

A liberal use of the lower percentage fruits and vegetables provides the necessary residue or bulk, facilitating adequate elimination.

The following diets and sample menus, arranged by our dietitian, Miss Ruth Bowden, illustrate the type of diets used in this clinic. Patients are advised to weigh their food whenever possible, otherwise approximate measures are used. Every diet is arranged to meet individual requirements, but in general they range from 800 to 1,200 calories daily.

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FOODS ALLOWED:

Soup—Clear broth and vegetable soup, without rice or barley.

Meat—Lean meat (all kinds except fresh pork), fish and fowl (except goose).

Egg—One daily prepared without fat.

Milk and Milk Products—Skim milk, buttermilk, cottage cheese, and small quantity of butter *or* cream.

Vegetables—Asparagus, beet greens, broccoli, Brussels sprouts, celery, chard, chicory, endive, lettuce, mushrooms, mustard, rhubarb, spinach, summer squash, turnip greens and watercress; cauliflower, cucumbers, kohlrabi, radishes, string beans and tomatoes; French artichoke, chayote, cabbage, eggplant, leeks, okra, green onions, green peppers, pumpkin, rutabagas, winter squash and turnips; beets, carrots, celery root, onions and oyster plant; parsnips and peas.

Fruits—(fresh, dried or waterpacked)—Blackberries, cranberries, gooseberries, guavas, limes, loquats, melons and strawberries; apples, grapefruit, huckleberries, lemons, loganberries, mulberries, oranges, papayas, peaches, pears, plums and raspberries; apricots, cherries, nectarines, pineapple and pomegranates.

Cereals and Cereal Products—Small quantity of bread—one to two slices daily.

Beverages—Clear coffee or tea, skim milk, buttermilk and tomato juice.

Miscellaneous—Saccharine, saxin, gelatine, mineral oil salad dressings and cooked dressings without oil or butter.

FOODS NOT ALLOWED:

Soup—Cream soup and any rich soup.
Meat—Fresh pork, goose and all fat meats.
Milk and Milk Products—Whole milk, cheese except cottage cheese, cream and butter except small quantity.
Vegetables—Potatoes, corn, sweet potatoes, lima beans and all dried beans.
Fruits—Crabapple, figs, grapes, mangos, persimmons, prunes, bananas, grape juice, all fruits canned with sugar, dried raisins, dates and figs.
Cereals and Cereal Products—All (including hominy, spaghetti, rice, macaroni, etc.) except the small quantity of bread allowed.
Concentrated Sweets and Starches—Sugar, jelly, jam, honey, candy, dried raisins, dates, desserts, pastry, cake, ice cream, cornstarch, tapioca, sago, etc.
Beverages—Whole milk, all sweet beverages and alcoholic beverages.
Miscellaneous—Avocado, chocolate, nuts, peanut butter, olives, lard, lard substitutes, bacon fat, gravies, and all salad dressings, except mineral oil and cooked dressing without oil or butter.

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800 CALORIE DIET (approximately 80 grams protein):

Breakfast
Fruit (without sugar) average serving (4 ounces).
Egg one *or* crisp bacon, three slices, *or* lean ham, one small slice (one ounce).
Bread, one-half slice.
Butter, one-half square.
Hot beverage (clear).

Luncheon
Cottage cheese, two ounces, *or* lean meat, fish *or* fowl, two ounces.
Vegetables, two or three servings.
Fruit (without sugar), average serving (four ounces).
Skim milk *or* buttermilk, one-half pint.

Dinner
Clear broth, tomato juice *or* vegetable soup.
Lean meat, fish *or* fowl, two ounces.
Vegetables, two or three servings.
Fruit (without sugar) average serving (four ounces).
Skim milk *or* buttermilk, one-half pint.

SAMPLE MENU

Breakfast
Sliced oranges, one medium orange.
Poached egg, one.
Toast, one-half slice.
Butter, one-half square.
Coffee (clear).

Luncheon
Cottage cheese, two heaping tablespoonfuls.
Combination vegetable salad (lettuce, tomatoes, cucumbers, asparagus and green pepper).
Mineral oil dressing.
Baked apple, one medium.
Skim milk, one glass.

Dinner
Consommé.
Lean roast beef, small slice (two ounces).
Brussels sprouts, three or four.
Banana squash, three tablespoonfuls.
Lettuce salad.
Mineral oil, French dressing.
Pineapple (fresh *or* waterpacked.
Skim milk, one glass.

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1000 CALORIE DIET (approximately 85 grams protein):

Breakfast
Fruit juice (orange *or* grapefruit), one glass.
Fruit (without sugar), one serving (five ounces).
Egg one *or* crisp bacon, three slices *or* lean ham, one small slice (one ounce).
Bread, one slice.
Butter, one-half square.
Hot beverage (clear).

Luncheon
Cottage cheese, two and one-half ounces *or* lean meat, fish or fowl, two and one-half ounces.
Vegetables, two or three servings.
Fruit (without sugar), one serving (five ounces).
Skim milk *or* buttermilk, one-half pint.

Dinner
Clear broth, tomato juice *or* vegetable soup.
Lean meat, fish *or* fowl, two and one-half ounces.
Vegetables, two or three servings.
Fruit (without sugar), one serving (five ounces).
Skim milk *or* buttermilk, one-half pint.

SAMPLE MENU

Breakfast
Orange juice, one glass.
Applesauce, one large dish (five ounces).
Crisp bacon, three slices.
Toast, one slice.
Butter, one-half square.
Coffee (clear).

Luncheon
Cold roast beef, two and one-half ounces.
Spinach, three tablespoonfuls.
Stewed tomatoes, three tablespoonfuls.
Artichoke, one medium.
Mineral oil mayonnaise.
Fresh pear, one large.
Buttermilk, one glass.

Dinner
Tomato juice, one glass.
Boiled halibut, two and one-half ounces.
Italian squash, three tablespoonfuls.
Cauliflower, three tablespoonfuls.
Grapefruit sections, one grapefruit.
Skim milk, one glass.

1200 CALORIE DIET (approximately 95 grams protein):

Breakfast
Fruit juice (orange *or* grapefruit), one glass.
Fruit (without sugar), one serving (five ounces).
Egg, one, *or* crisp bacon, three slices, *or* lean ham, one ounce.
Bread, one slice.
Butter, one-half square.
Hot beverage (clear).

Luncheon
Cottage cheese, three ounces, *or* lean meat, fish *or* fowl, three ounces.
Vegetables, two or three servings.
Fruit (without sugar), one serving (five ounces).
Bread, one-half slice.
Butter, one-half square.
Skim milk *or* buttermilk, one-half pint.

Dinner
Clear broth, tomato juice *or* vegetable soup.
Lean meat, fish *or* fowl, three ounces.
Vegetables, two or three servings.
Fruit (without sugar), one serving (five ounces).
Bread, one-half slice.
Butter, one-half square.
Swim milk *or* buttermilk, one-half pint.

SAMPLE MENU

Breakfast
Grapefruit juice, one glass.
Apricot (fresh, dried *or* waterpacked), one large dish (five ounces).
Lean ham, one ounce.
Toast, one slice.
Butter, one-half square.
Coffee (clear).

Luncheon
Crab salad (crab, three ounces, lettuce, tomato, celery and cucumber).
Mineral oil mayonnaise.
Raw apple.
Crackers, two.
Butter, one-half square.
Skim milk, one glass.

Dinner
Vegetable soup.
Boiled tongue, three ounces.
Spinach, three tablespoonfuls.
Diced beets, three tablespoonfuls.
Fresh celery, three stalks.
Sliced oranges, one large orange.
Skim milk, one glass.

NOTE: Vegetables to be served without butter or cream.

Salads to be served with lemon, vinegar or mineral oil dressing.

Saccharine or saxin may be used for sweetening.

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ENDOCRINE ASPECTS

H. LISSER, M. D. (Fitzhugh Building, San Francisco).—Endocrine obesity is a controversial subject. Everyone is agreed that there is such a thing as ductless gland adiposity; dissension concerns its frequency, its character, and the indications for glandular therapy.

Considerations of brevity permit but bold, blunt outlines crudely sketched; no time is left for argumentative or interpretative shading. In fairness, this must be borne in mind when appraising the terse statements which follow.

1. *Myxedema and milder forms of hypothyroidism* are usually accompanied by a moderate degree of obesity, some of which is "water-logging." Administration of thyroid substance to such individuals is indicated and perfectly safe when properly supervised. The weight reduction consists chiefly of fluid loss and dissipation of myxedematous deposits. Such patients are rarely more than fifty pounds overweight.

2. *Persons who are seventy-five or more than one hundred pounds overweight* have something else the matter with them, and usually we cannot find out what this is. A few of them are gluttons; most of them are not. Ordinary low caloric diets of 1,000 to 1,500 calories daily fail to reduce them much, if any. Severely subcaloric diets of the Evans type (300 to 600 calories) are necessary for adequate weight loss.

3. *The basal metabolic rate* in obese persons is not, by itself, an indication for or against the use of thyroid substance. It can be used safely and

effectually in patients whose basal rates are normal, and it can be futile or harmful in patients whose low basal rates are not due to hypothyroidism. In the last analysis the final test of a diagnosis of hypothyroidism is the response of the patient to thyroid administration. This is specific.[1]

4. Animated controversy continues concerning the merits, demerits, futility or danger of utilizing thyroid substance in the treatment of *non-thyroid obesity*. It is probably only fair to state that the most respected opinion denounces its use for this purpose. But the writer is quick to add, quite frankly, that he has employed this valuable adjunct to a proper reducing régime for over fifteen years in a truly large number of patients, and expects to continue doing so. Its dangers have been grossly exaggerated. Indeed, the propaganda of fear concerning it has been so widespread and intense that a large percentage of not only the laity, but also the medical profession itself, has become so frightened and panicky that much time is lost in trying to persuade patients, and especially their families and medical advisers, to give this preparation a trial. Most certainly, thyroid can do serious harm, when prescribed to the wrong person, for the wrong condition, or to excess. But so can digitalis, quinidin, insulin, salvarsan, massage, psycho-analysis or surgery, or any other truly potent therapeutic procedure. Only impotent measures are harmless. The purchase of thyroid substance, or preparations containing it, by the laity, without prescription, and without proper medical supervision, should be prohibited by law. But that any properly trained physician should be afraid of it is tantamount to admitting that he is not properly trained; for it is one of the easiest drugs to control, both by clinical observation and laboratory checks. Symptoms and signs of thyroid overdosage are by no means vague or elusive.

5. It has long been known that *castration* is usually followed by more or less obesity. Indeed, this is deliberately practiced in animal husbandry to prepare fatter, sweeter meat for market. Women ordinarily gain weight after the *menopause;* some do not; why, we do not know. It is reasonable to assume that *gonadal deficiency* in male and female may at times be associated with varying degrees of corpulence; but at present such endocrinopathies are difficult to diagnose with certainty. Moreover, treatment with corresponding glandular extracts, namely, the male or female sex hormones, does not reduce such adiposity specifically. Possibly there exist as yet undiscovered sex hormones which influence metabolism; comparable to the recently postulated metabolic hormone from the adenohypophysis. Or maybe the eunuch and eunuchoid becomes obese because of a secondary deficiency of some other ductless gland, as the thyroid, pituitary, or adrenal.

6. Although obesity is common in *diabetes mellitus,* and has been abundantly stressed as a potential precursor of insulary deficiency, diabetes is actually uncommon in the huge population of obese persons. Moreover, insulin has no reducing powers and, in fact, is utilized for fattening purposes in undernourished individuals.

7. *Adrenal cortical* tumors are relatively uncommon. The syndromes "genitosurrenale" caused by them, especially the pseudosexual-precocity of little girls and the virilism of adult females, are ordinarily associated with obesity, sometimes of immense proportions. It is conceivable that cortical hyperplasia without tumor can produce similar abnormalities. The fat is distributed in a manner resembling the obesity which characterizes Cushing's hyperpituitary basophilism, in the hips, buttocks, abdomen, breasts, thighs, and upper arms; the forearms and legs being singularly free from fat accumulation. Some investigators, notably Goldzieher, claim to have isolated a specific principle from the adrenal cortex which influences fat metabolism. He and associates[2] report the removal of one hyperplastic adrenal three times normal size from a 23-year-old woman who weighed 335 pounds, and who had failed to lose by thyroid and dietary measures. No dietary restrictions were utilized after the operation, and in one year thereafter she lost 145 pounds.

8. The numerous and highly significant investigations of the last twelve years concerning the functions of the *anterior and posterior hypophysis* have by no means settled the disputed relation of the pituitary body to fat metabolism. Camus and Roussy, in 1921, "showed that the adiposities with which pituitary ablation had been so often accompanied could be produced by slight injuries to the superficial gray of the tuber cinerum near the hypophysis, but with the hypophysis itself perfectly intact." This has been confirmed by others. So-called hypophyseal obesity had to be moved next door into the hypothalamus. But in 1931,[3] Anselmino and Hoffman reported the occurrence of a substance in the anterior lobe, separable from the growth, gonadotropic, thyrotropic and lactogenic hormones, which causes a rise of the acetone bodies in the blood. It occurs in the blood stream, and has been isolated from the urine. It appears in the blood only when fat is burned.

This discovery, together with the recently postulated syndrome by Cushing of pituitary basophilism in which a rapidly acquired, peculiarly distributed plethoric and sometimes painful obesity is a highly characteristic phenomena, suggests that a pituitary responsibility for certain forms of obesity merits further consideration.

Meanwhile, the majority of clinicians who have attempted to influence weight reduction by the oral or hypodermic administration of anterior, pituitary or "whole" pituitary products, consider such therapy useless. A few hold otherwise, but have not provided acceptable proof of their contentions. No doubt this will be settled eventually.

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1 Lisser, H.: The Clinical Indications for, and the Proper Use of Thyroid Substance, International Clinics (Dec.), 1933.

2 Koster, Goldzieher, Collens, and Victor: Am. J. Surg., 13:311, 1931.

3 Anselmino, K. J. and Hoffman, F.: Klin. Wchnschr. 10:2380, 1931.